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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/731,775	12/08/2000	Richard Hellberg	003250-235	7231
27045	7590	08/23/2006	EXAMINER	
ERICSSON INC. 6300 LEGACY DRIVE M/S EVR C11 PLANO, TX 75024				FILE, ERIN M
		ART UNIT		PAPER NUMBER
		2611		

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

A

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	09/731,775	HELLBERG, RICHARD
	<b>Examiner</b>	<b>Art Unit</b>
	Erin M. File	2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 07 June 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,2,4,12,13,15 and 22 is/are rejected.
- 7) Claim(s) 3-5-11,14 and 16-21 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 07 June 2006 is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Priority***

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Sweden on 06/10/1998. It is noted, however, that applicant has not filed a certified copy of the Swedish application as required by 35 U.S.C. 119(b).

### ***Response to Arguments***

2. Applicant's arguments filed June 7, 2006 have been fully considered but they are not persuasive.
3. The applicant contends:

Williams teaches the use of FFT based filtering for equalization. In contrast, Liu is directed to beamforming, and uses different weighting factors for beamforming differently at different frequencies. No selection of a channel comprising a range of frequency samples is done; rather, it is a per-antenna pure filtering operation. Liu then uses time domain interpolation by zero-padding in the frequency domain. The Examiner has misinterpreted the meaning of the frequency domain weighting factors employed by Liu', since the data streams that have been multiplied with the weighting factors are brought together in the IFFT, no channel selection has been performed. In other words, it is a pure frequency domain beamforming technique. Thus, there is no teaching, much less a suggestion, in either Williams or Liu to combine their teachings to arrive at the claimed invention.

The examiner contends that Williams does in fact meet the limitation of selecting a range of discrete Fourier transform bins around the center of the channel. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., channel selection) are not recited in the rejected claim(s). Although the claims are

interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 4, 12, 13, 15, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al (U.S. Patent 5,886,749) in view of Liu et al. (U.S. Patent 5,671,168).

**Claims 1, 12,** Williams discloses selecting a range of samples (col. 9, lines 63-64) and performing n Discrete Fourier Transforms (fig. 18, 173). Multiplying said bins with a frequency response (fig. 18, 178, col. 6, lines 11-18), performing an  $N_{IDFT}$ -point Inverse Discrete Fourier Transform on these n data points (fig. 18, 179); and a further signal processing including matched channel filters (fig. 18, 180). Williams fails to disclose the selection of Fourier transform bins around the center frequency, however, Liu discloses a Fourier transform multiplying the Fourier transformed signals,  $X_i(f)$ , with center frequencies of M adjacent channel frequency bins (fig. 1, output 2), are multiplied by a weighting coefficient  $w_i(f)$  (fig. 1, 3), and then a inverse Fourier transform is performed on the signal (fig. 1, 5, col. 9, lines 4-18). The center frequency of a signal

is the point at which the most data is transmitted, and the area directly around the center frequency would carry the greatest amount of information. Because of this value it would be obvious to one skilled in the art at the time of invention to incorporate Liu's selection of center frequency region of Fourier transformed signals into Williams demodulation technique.

**Claims 2, 13**, Williams further discloses performing a  $N_{DFT}$ -point Fast Fourier Transform (fig. 3, 62) on overlapping blocks of the data stream (col. 3, line 15).

**Claims 4, 15**, Williams further discloses the limitation of a frequency response having a limited range, the frequency response multiplication as described in Claim 1 is stated to be used to multiply the received signal to remove echos (col. 6, lines 11-26). In order to remove a part of the frequency channel in the multiplication of the received signal, the multiplication by the inverse of the Fourier transform to remove signal echoes much by definition be limited in the frequency domain.

**Claim 22**, Williams further discloses further signal processing including matched channel filters (fig. 18, 180).

***Allowable Subject Matter***

6. Claims 3, 5-11, 14, 16-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is (571)272-6040. The examiner can normally be reached on M-F 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Erin M. File

EMF

8/14/2006

  
MOHAMMED GHAYOUR  
SUPERVISORY PATENT EXAMINER